UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,883	02/06/2001	Katsuyuki Hirata	325772021800	8414

25227	7590	07/01/2004

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ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
	09/776,883	HIRATA ET AL.
Office Action Summary	Examiner	Art Unit	
	Tia A Carter	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25 and 29-30* is/are rejected.

7)☒ Claim(s) *26-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date *4, 6, 8*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

2.   Claims 1-18, 22 and 29 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yoshida (US. 6104509) in view of Maekawara et al. (US.

6121993).

Regarding claim 1, Yoshida discloses a light quantity correction method for
an

exposing device provided with a plurality of light emitting elements comprising

steps of:

Step 1 where the exposing device is allowed to emit light in a plurality of

light emission patterns (fig. 4, col. 8,lines 45-56), and quantity of light emitted

from each light emitting element is measured for each light emission pattern (fig.

5, col. 8, lines 56-60);

Yoshida **do not disclose** step 2 where a change rate of a light quantity

distribution of the exposing device is calculated based on the light quantity

measured for each light emission pattern

Maekawara et al. **discloses** step 2 where a change rate of a light

quantity distribution of the exposing device is calculated based on the light

quantity measured for each light emission pattern (fig. 9, col. 19, lines 55-67 and

col. 20, lines 1-10);

Step 3 where a correction value for the light quantity emitted from each light

emitting element is calculated based on the light quantity measured in the step 1

(fig. 4, col. 8, lines 37-41) and Maekawara et al. **discloses** the change rate of the

light quantity distribution calculated in the step 2 (fig. 9, col. 19, lines 55-67 and

col. 20, lines 1-10).

It would have been obvious to one skilled in the art at the time of the

invention to modify Yoshida with Maekawara et al. wherein the distribution of the

led's would be implemented in the method preventing a miscalculation of the light

quantity whereas depending upon the rate of the light would effect the calculated

value assumed.

Regarding claim 2, Yoshida discloses a light quantity correction method for

the exposing device according to claim 1, wherein the plurality of light emission

patterns include:

A first pattern where only one of all the light emitting elements of the

exposing device is turned on (fig. 7, col. 13, lines 6-25);

A second pattern where all the light emitting elements of the exposing

device are turned (fig. 4, col. 8, lines 41-44).

Regarding claim 3, Yoshida discloses a light quantity correction method for the exposing device according to claim 2.

Yoshida **do not disclose** wherein plural times of light quantity measurement are conducted for the second pattern in the step 1.

Maekawara et al. **discloses** wherein plural times of light quantity measurement are conducted for the second pattern in the step 1 (fig. 6, col. 20, lines 51-55 and col. 12,lines 3-6).

It would have been obvious to one skilled in the art at the time of the invention to modify Yoshida wherein multiple time calculation is conducted to compensate for time lag when processing of the image.

Regarding claim 4, Yoshida discloses a light quantity correction method for the exposing device according to claim 3.

Yoshida **do not discloses** wherein focus position of the light emitting elements is shifted every time for the plural times of light quantity measurements for the second pattern.

Maekawara et al. **discloses** wherein focus position of the light emitting elements is shifted every time for the plural times of light quantity measurements for the second pattern (fig. 10, col. 21, lines 1-26).

It would have been obvious to one skilled in the art at the time of the invention to modify Yoshida wherein multiple time calculation is conducted to compensate for time lag when processing of the image.

Regarding claim 5, Yoshida discloses a light quantity correction method for

the exposing device according to claim 1, wherein

A plurality of correction values of the light quantity for each of the light

emitting elements are calculated in the step 3 (fig. 7, col. 14, lines 66-67; table 1,

col. 15, lines 1-32), and

The method includes a further step of selecting a correction value to be

used for light quantity correction of the exposing device among the plurality of

correction values (fig. 8, col. 16, lines 14-29).

Regarding claim 6, Yoshida discloses a light quantity correction method

for the exposing device according to claim 5, wherein the plurality of light

emission patterns include:

A first pattern where only one of all the light emitting elements of the

exposing device is turned on (fig. 7, col. 13, lines 6-25);

A second pattern where all the light emitting elements of the exposing

device are turned (fig. 4, col. 8, lines 41-44).

Regarding claim 7, Yoshida discloses a light quantity correction method

for the exposing device according to claim 2.

Yoshida **do not disclose** wherein plural times of light quantity

measurement are conducted for the second pattern in the step 1.

Maekawara et al. **discloses** wherein plural times of light quantity measurement are conducted for the second pattern in the step 1 (fig. 6, col. 20, lines 51-55 and col. 12,lines 3-6).

It would have been obvious to one skilled in the art at the time of the invention to modify Yoshida wherein multiple time calculation is conducted to compensate for time lag when processing of the image.

Regarding claim 8, Yoshida discloses a light quantity correction method for the exposing device according to claim 7.

Yoshida **do not disclose** a plurality of change rates relating to light quantity distribution of the exposing device are calculated in the step 2.

A plurality of change rates relating to light quantity distribution of the exposing device are calculated in the step 2 (fig. 9, col. 19, lines 55-67 and col. 20, lines 1-10), and

A plurality of correction values of the light quantity for each of the light emitting elements are calculated in the step 3 based on the plurality of change rates obtained in the step 2 **disclosed by** Maekawara (fig. 9, col. 19, lines 55-67 and col. 20, lines 1-10); (fig. 4, col. 8, lines 37-41).

It would have been obvious to one skilled in the art at the time of the invention to modify Yoshida with Maekawara et al. wherein the distribution of the led's would be implemented in the method preventing a miscalculation of the light quantity whereas depending upon the rate of the light would effect the calculated value assumed.

Regarding claim 9, Yoshida discloses a light quantity correction method for the

exposing device according to claim 7.

Yoshida **do not disclose** wherein focus position of the light emitting

elements is shifted every time for the plural times of light quantity measurements

for the second pattern.

Maekawara et al. **discloses** wherein focus position of the light emitting

elements is shifted every time for the plural times of light quantity measurements

for the second pattern (fig. 10, col. 21, lines 1-26).

It would have been obvious to one skilled in the art at the time of the

invention to modify Yoshida wherein multiple time calculation is conducted to

compensate for time lag when processing of the image.

Regarding claim 10, Yoshida discloses an image forming device comprising:

An exposing device provided with a plurality of light emitting elements (fig.

4, col. 7, lines 22-26 and lines 37-45);

A controller (202) for conducting process including the following steps:

Step 1 where the exposing device is allowed to emit light in a plurality of light

emission patterns (fig. 5, col. 8, lines 46-56); and

Quantity of light emitted from each light-emitting element is measured for

each light emission pattern (fig. 4, col. 8, lines 45-56);

Yoshida **do not disclose** step 2 where a change rate of light quantity

distribution of the exposing device is calculated based on the light quantity

measured for each light emission pattern; and

Maekawara et al. **disclose** step 2 where a change rate of light quantity

distribution of the exposing device is calculated based on the light quantity

measured for each light emission pattern (fig. 9, col. 19, lines 55-67 and col. 20,

lines 1-10); and

Step 3 where a correction value of the light quantity emitted from each light

emitting elements is calculated based on the light quantity measured in the step

1 (fig. 7, col. 14, lines 66-67; table 1, col. 15, lines 1-32) and Maekawara et al.

discloses the change rate of the light quantity distribution calculated in the step

2 (fig. 9, col. 19, lines 55-67 and col. 20, lines 1-10).

It would have been obvious to one skilled in the art at the time of the

invention to modify Yoshida with Maekawara et al. wherein the distribution of the

led's would be implemented in the method preventing a miscalculation of the light

quantity whereas depending upon the rate of the light would effect the calculated

value assumed.

Regarding claim 11, Yoshida discloses a an image forming device

according to claim 10, wherein the plurality of light emission patterns include:

A first pattern where only one of all the light emitting elements of the

exposing device is turned on (fig. 7, col. 13, lines 6-25);

A second pattern where all the light emitting elements of the exposing device are turned (fig. 4, col. 8, lines 41-44).

Regarding claim 12, Yoshida discloses an image forming device according to claim 11, wherein the controller conducts plural times of light quantity measurements for the second pattern (fig. 6, col. 20, lines 51-58).

Regarding claim 13, Yoshida discloses an image forming device according to claim 12.

Yoshida **do not disclose** wherein the controller shifts focus positions of the light emitting elements every time to conduct the plural times of light quantity measurements for the second pattern.

Maekawara et al. **discloses** wherein the controller (CPU) shifts focus positions of the light emitting elements every time to conduct the plural times of light quantity measurements for the second pattern (fig. 10, col. 21, lines 1-26).

It would have been obvious to one skilled in the art at the time of the invention to modify Yoshida wherein multiple time calculation is conducted to compensate for time lag when processing of the image.

Regarding claim 14, Yoshida disclose an image forming device according to claim 10, wherein the controller calculates a plurality of correction values of the light quantity for each of the light emitting elements and selects a correction

value to be used for light quantity correction among the plurality of correction

values (fig. 7, col. 14, lines 66-67; table 1, col. 15, lines 1-32).

Regarding claim 15, Yoshida discloses an image forming device according

to claim 14, wherein the plurality of light emission pattern include:

A first pattern where only one of all the light emitting elements of the

exposing device is turned on (fig. 7, col. 13, lines 6-25);

A second pattern where all the light emitting elements of the exposing

device are turned (fig. 4, col. 8, lines 41-44).

Regarding claim 16, Yoshida discloses an image forming device according

to claim 11, wherein the controller conducts plural times of light quantity

measurements for the second pattern (fig. 6, col. 20, lines 51-58).

Regarding claim 17, Yoshida discloses an image forming device according to

claim 16.

Yoshida **do not disclose** wherein the controller calculates a plurality of

change rates relating to light quantity distribution of the exposing device and

further calculates a plurality of correction values of the light quantity for each of

the light emitting elements based on the plurality of change rates.

Maekawar et al. **discloses** wherein the controller calculates a plurality of

change rates relating to light quantity distribution of the exposing device and

further calculates a plurality of correction values of the light quantity for each of

the light emitting elements based on the plurality of change rates (fig. 9a, col. 19, lines 50-60; fig. 9d, col. 20, lines 1-35) .

It would have been obvious to one skilled in the art at the time of the invention to modify Yoshida with Maekawara et al. wherein the distribution of the led's would be implemented in the method preventing a miscalculation of the light quantity whereas depending upon the rate of the light would effect the calculated value assumed.

Regarding claim 18, Yoshida discloses an image forming device according to claim 16.

Yoshida **do not disclose** wherein the controller shifts focus position of the light emitting elements every time to conduct the plural times of light quantity measurements for the second pattern.

Maekawara et al. **discloses** wherein the controller shifts focus position of the light emitting elements every time to conduct the plural times of light quantity measurements for the second pattern (fig. 10, col. 21, lines 1-26).

It would have been obvious to one skilled in the art at the time of the invention to modify Yoshida wherein multiple time calculation is conducted to compensate for time lag when processing of the image.

Regarding claim 22, Yoshida discloses a light quantity correction method for the exposing device according to claim 19.

Yoshida **do not disclose** including a further step where data read in the

step2 is subjected to smoothing

Maekawara et al. **disclose** including a further step where data read in the

step2 is subjected to smoothing (figs. 10-11, col. 21, lines 35-42).

It would have been obvious to one skilled in the art at the time of the

invention to modify Yoshida wherein image quality is corrected based on a time

interval whereas the actual recording medium while forming the pattern produces

frequency/noise patterns whereas the image may be shifted if a correction and/or

filtering process is not implemented.

Regarding claim 29, Yoshida discloses an image forming device according

to claim 23.

Yoshida **do not disclose** wherein the controller outputs the data read by the

reader to the outside of the image forming device and obtained correction value

of light quantity for each light emitting elements from the outside of the image

forming device, instead of calculating the correction value based on the data read

by the reader

Maekawara et al. **discloses** wherein the controller outputs the data read by

the reader to the outside of the image forming device (fig. 1, col. 15, lines 20-27)

and obtained correction value of light quantity for each light emitting elements

from the outside of the image forming device, instead of calculating the correction

value based on the data read by the reader (fig. 9a, col. 19, lines 36-49).

It would have been obvious to one skilled in the art at the time of the

invention to modify Yoshida wherein the image data can be obtained from other

devices providing light quantity correction for more than just a recorded whereas

there may be a plural device in which LED's emits light and need proper

correction. This gives the invention multiple possibilities and extended

advancement.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 19-21, 23-25, and 30 are rejected under 35 U.S.C. 102(b) as being

anticipated by Yoshida (US. 6104509).

Regarding claim 19, Yoshida discloses a light quantity correction method for an

exposing device provided with a plurality of light emitting elements (fig. 4, col. 8,

lines 29-36) comprising steps:

Step 1 where an exposing device is allowed to emit light to form an optical

pattern (fig. 4, col. 7,lines 37-45);

Step 2 where the optical pattern formed in the step 1 is read (fig. 4, col. 7, lines 26-29); and

Step 3 where a correction value of light quantity for each light emitting elements is calculated based on data read in the step 2 (fig. 4, col. 7, lines 26-29 and col. 8,lines 29-36),

Wherein the optical pattern is constituted by a plurality of patterns having gradations different from each other (fig. 7 and table 1, col. 15, lines 9-32).

Regarding claim 20, Yoshida discloses a light quantity correction method for exposing device according to claim 19, wherein the optical pattern is formed on a recording medium (fig. 1, col. 4, lines 27-32).

Regarding claim 21, Yoshida discloses a light quantity correction method for exposing device according to claim 19, wherein the optical pattern includes a mark to indicate positional information (fig. 5, col. 9, lines 39-42).

Regarding claim 23, Yoshida disclose an image forming devoice comprising:

An exposing device provided with a plurality of light emitting elements (fig. 5, co. 8, lines 45-56);

An image forming station for allowing the exposing device to emit light to form an optical pattern (fig. 5, col. 9, lines 23-34);

A reader for reading the optical pattern formed by the image forming

station (fig. 1, col. 4, lines 27-32); and

A controller (202) for conducting process of calculating a correction value of

light quantity for each light emitting element based on data read by the reader

(fig. 6, col. 9, lines 37-44),

Wherein the optical pattern is constituted by a plurality of patterns having

gradation different from each other (table 1, col. 15, lines 8-32).

Regarding claim 24, Yoshida discloses an image-forming device according

to claim 23, wherein the image forming station forms the optical pattern on a

recording medium (fig. 1, col. 4, lines 27-32).

Regarding claim 25, Yoshida discloses an image forming device according to

claim 24, wherein the controller conducts process of eliminating moisture on the

recording medium before forming the optical pattern (fig. 3, col. 7, lines 4-20).

Regarding claim 30, Yoshida discloses an image forming device according

to claim 23, wherein the reader reads the optical pattern in a direction

perpendicular to a direction in which the image forming station forms the optical

pattern (fig. 4, col. 8, lines 1-6).

Claim Objections

1.   Claims 26-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

2.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Haraguchi et al. (US. 6525840), Naeshimaet al. (US. 6330083), and Fujita (US. 6163331) are cited to show related art with respect to image forming apparatus with light quantity correction.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tia A Carter whose telephone number is 703 - 306-5433. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly A Williams can be reached on 703-305-4863. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
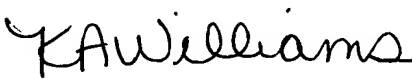
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direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

                                        Tia A Carter
                                        Examiner
                                        Art Unit 2626

TAC
June 25, 2004

KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER